

DATA

ON

Electric
SIGNS

COMPILED BY

COMMITTEE ON ELECTRIC
ADVERTISING ❖ ❖ ❖ ❖ ❖

COMMERCIAL SECTION
NATIONAL ELECTRIC LIGHT
ASSOCIATION ❖ ❖ ❖ ❖ ❖

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DATA ON Electric Signs

COMPILED BY THE
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Acknowledgment

ON the last pages of this *Bulletin* will be found the business cards of those members of the Commercial Section of the National Electric Light Association to whom we wish to express our thanks for the financial co-operation which has made this publication possible.

The Committee

DATA ON ELECTRIC SIGNS

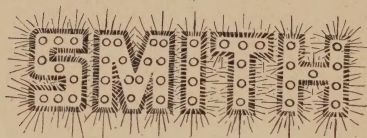
This Bulletin is designed to give non-technical employees of the Central Stations, who may be engaged in selling current for Electric Advertising, the fundamental facts upon which good practice is based. In all cases the recommendations are designed with a view to giving the best results, regardless of the selfish interests of the Central Station, the Sign Manufacturer, the Lamp Manufacturer or the Customer.

The first point which your Committee desires to make plain is that Electric Advertising is not alone the most effective form of advertising, commercially, but is the highest class of any advertising procurable. While vulgar, garish and ill-designed signs are to be seen in many cities, this is not the fault of Electric Advertising, but rather it is the fault of those directly concerned with the individual signs which offend. If the man who buys the sign will permit himself to be guided, within reason, by the man who sells, and if the salesman will counsel the buyer to erect the best and most fitting sign for the especial purpose in hand, Electric Advertising becomes at once the cheapest advertising, the most up-to-date, the most artistic and most dignified.

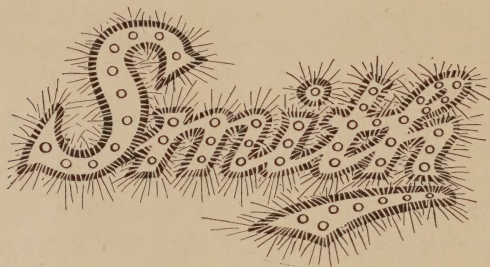
GENERAL CONSIDERATIONS

It should never be forgotten that an electric sign is primarily an advertisement. The ordinary painted sign over the door-way of a shop announces merely the name and business of the occupant; an electric sign, being easily legible for hundreds of feet, reaches out insistently and compels the attention of those passing at a distance. Therefore, even in its simplest form, it should convey an advertising message.

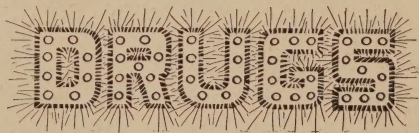
For example, let us suppose that an apothecary named Smith desires a sign, and that, owing to local conditions, he is compelled to erect the cheapest possible electric display. He is proud of his business reputation and feels that his name is his trade-mark, so he orders a sign reading—



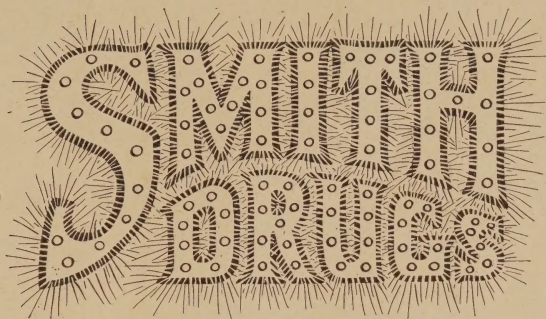
This is a sign, surely, but it is not advertising. If it is true that his name is well-known and therefore is a good advertisement in itself, he should adopt a characteristic style of lettering so that his sign shall be distinctive from the sign of any other Smith: Thus—



—might be used, but must be larger than the plain type sign and will cost more because it must be made to order and stock material cannot be used. Also such distinctive lettering should be used on labels, wrapping paper, letter-heads and for every purpose where the name is employed in a business connection. Even when so used, however, it is less effective, from an advertising standpoint, than the single word—



which might be used on the sign at no greater expense to the merchant than the name in simple letters. Even this, however, can be improved upon at comparatively little cost. If a flasher is used, we can run a sign reading—



flashing the words alternately, thus getting maximum advertising effect. The flasher effect may actually increase the operating cost, but the advertising value is almost always worth extra expense. This example is necessarily a simple one but it shows that wherever a sign is under consideration there is opportunity to add the advertising touch.

Artistic design is the next thing to consider. Electric signs have not only all the colors, but they have the one great quality which artists have always sought—the quality of light. On this account electric signs should be more artistic than painted signs, because they compel attention without resorting to garish color contrasts and shrieking incongruities. The “City Beautiful” movement is advanced by the erection of well-designed, well-proportioned, brilliant yet dignified electric signs, for these are no more to be compared with the ordinary painted bulletins than is a well-proportioned library building to be compared with a roughly built factory. The salesman who is introducing Electric Advertising should always bear this in mind and should encourage his customers to invest in only such signs as shall raise the artistic standard of the community. This, be it remembered, is a matter of design only; a beautiful sign is not necessarily more expensive than one that offends good taste, while its advertising value is always in exact ratio to its attractiveness.

Substantial construction is, of course, a basic necessity. Better no signs at all than signs which appear flimsy or in which any danger lurks. Perhaps the greatest difficulty the conscientious sign salesman has to overcome, is to persuade his customers that quality in construction is the basis of sign cost. When erected, a cheap sign may look as good as any, but the cheap sign is cheap *inside*—the difference in price is almost invariably taken out of the hidden



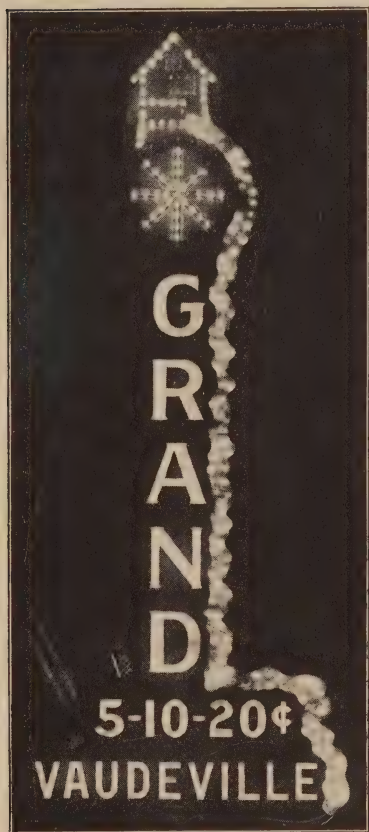
A sign that talks to thousands. The United States Motor Company advertises a number of the automobiles it manufactures by means of the fifty "monograms." By means of a flasher the lettering is constantly changed and a different advertisement is shown.

material. This matter is controlled to a certain extent by local ordinances, but that is not enough protection. The differences in quality should be explained to the customer and he should not be permitted to buy blindly or for appearances a piece of apparatus the basic quality of which ordinarily he does understand.

There are many self-evident reasons for quality—the life of the sign, its cost of upkeep, fire protection and the protection of pedestrians. A sign that is not calculated to stand the windage of a very heavy storm or one in which there is even a remote possibility of fire hazard, should be rejected alike by the customer and the Central Station. Sign manufacturers of established reputation are very careful on these points and go to extreme lengths to provide a margin of safety that to the layman seems ridiculously high. The customer cannot understand why a sign should be 1000% better than necessary and he is willing to listen to a less conscientious sign maker who offers "the same thing for less money." The Central Station salesman should be patient in explaining the differences in quality and should not permit his anxiety for the immediate order to bias his better judgment. The average man is willing to pay for quality if he is convinced that the quality is in the goods.

Maintenance is of equal importance with artistic design and quality of construction. No matter how beautiful a sign may be when erected, it will in time become shabby and unattractive unless it receives proper care. Lamps should be in good condition so that there are neither bright nor dark spots in the sign. The surface

of the sign should be kept clean and bright, and small repairs necessitated by hard weather should be made promptly. The advantage—even the necessity—of proper maintenance is not open to dispute, but the man who is about to erect an electric sign should understand that such maintenance is not gratuitous and should allow for it in estimating his costs.



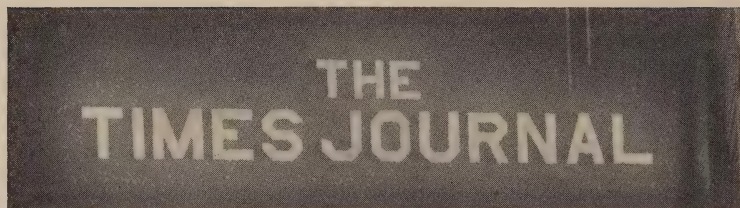
A Vaudeville Sign in which the flashing effect compels attention. In this sign the mill wheel turns constantly and the flow of water at the edge of the sign is carried out in a very realistic manner. Considering advertising effect, this is a very inexpensive sign.

THE SELECTION OF A SIGN

To sum up, the three basic considerations involved in any Electric Advertising proposition are: artistic and dignified design; advertising value and "pulling power"; sturdy construction, and high quality material and proper and constant maintenance. If these points receive proper consideration, the resultant sign will be profitable and satisfactory to all parties interested—the Central Station, the Sign Manufacturer and the Customer.

If it is to burn into the public mind the name of a department store or a millinery shop, it should carry grace and dignity; if it is to sell seats at a moving picture or vaudeville show, it should be bright and spectacular. The value of a sign to a hotel is in the number of names it puts on the register; the newspaper measures the worth of its sign by the number of subscriptions and want ads with which it can be credited; if an increase in deposits and other business could not be attributed to the bank sign, it would not burn long—

and so on down the line. The ultimate proof of a sign is in the goods it sells, though in this connection, the cumulative advertising value must not be forgotten.



The question is sometimes asked whether electrical advertising is better than newspaper advertising. The two are not to be compared nor are they competitive. Many newspapers employ attractive signs. This example being in Dubuque, Ia.

It would be well, however, for the man who is erecting the sign to give his own ideas, for most merchants are clever and original in laying out attractive advertising ideas. A good way to start is to get a cheap carton of colored crayons, such as school children use, and with these make the preliminary sketch. Such a sketch must, of course, be elaborated by a practical sign designer.

REQUEST FOR DESIGN

Date _____ 191 _____

Name _____

Address _____

Sign to read (*Electric*) _____

Wording *Unilluminated* _____

Double or single face _____ *Horizontal or vertical* _____

Length (about) _____ Width (about) _____

To hang over walk or flat against bldg. _____

Size of letters _____ *Raised, Grooved or Flush* _____

Current, A. C. or D. C.; 2 or 3 wire system _____

Color of Background preferred _____

Wire or Flasher _____

Wire for Carbon or Mazda Lamps _____

Remarks _____

_____ *With or without Transformer* _____



One of the most famous signs in New York is the blazing cross on the tower of the Judson Memorial Church, Washington Square. This cross is lighted from dusk until midnight every night of the year.

SIZE

An electric sign should be in proportion with its location. It should not be so large as to dominate and detract from the architectural beauty of the building upon which it is erected, nor should it be so small as to give a mean or stunted effect.

Generally speaking, a large sign of distinctive design, and real advertising efficiency, operating on a first-class flasher, is to be recommended in preference to a smaller sign burning constantly. The cost of current may be the same in both cases, but the advertising advantage of the larger display and the attention-compelling movement of the lights greatly outweigh its higher cost.

COST

"Overloading the customer" is bad practice, whether in merchandise or advertising. It should be the salesman's policy to sell his customer a sign that fits both his business and pocket-book.

In estimating the costs and value of Electric Advertising three things must be considered—the size and first cost of the sign; the cost of current and maintenance; and the cost or value of the location. Against these items should be set down as credits, the advertising value of the sign and its efficiency as a sales influence.

It is obviously impossible to give any approximations of cost in this Bulletin. The salesman should endeavor to persuade his customer to make an investment in proportion to the importance of the business—neither extravagant and wasteful, nor small and undignified. Especially should the customer be warned against trying to crowd over-much reading matter into the sign by using too small letters.

"Cut your cost to fit the cloth" is a mighty good motto to remember in this connection.



In the heart of the great white way—this picture shows no less than nine National advertising signs while practically every important establishment located here in New York has its own electric advertisement. Our Broadway effects cannot be expected in smaller cities. It must be remembered that these signs cost thousands of dollars where signs in less famous locations cost tens.

LOCATION

The cost and value of a sign location is a point which has not been properly considered in the past. Sign locations along Broadway, New York, on the Boardwalk at Atlantic City, on State Street, Chicago, or in smaller crowded districts, have a very real value. They bring—and are worth—high rentals. But many merchants having equally desirable space for their own signs do not realize these values and consequently do not take advantage of the opportunity to capitalize them.

A sign location should be classed as “advertising space.” In the newspapers or magazines, space is valued according to circulation—by which is meant the number of people likely to see the page. Sign space should be valued the same way. If a merchant has a prominent roof, where hundreds or thousands would see his sign every day, he is wasting an opportunity—wasting real money—if he does not utilize it. Just imagine having a large and valuable piece of newspaper space and neglecting to supply “copy” to fill it. Another way to bring this point home, is to compare a sign location with a display window. Can you imagine a sane merchant leaving his display windows vacant?

The sign salesman should carefully study the location before recommending a sign. Such study includes careful analysis of the number and class of passers-by, the distance from which the sign could be read, and the advertising advantage of spectacular display which one merchant would have over his competitors.

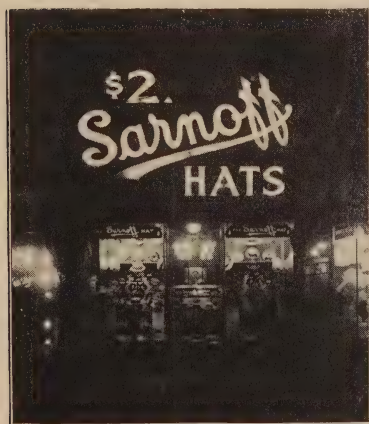


An excellent example of electric advertising in which the sign and the interior lighting play equal parts. Anyone who passes this restaurant by night wishes to stop and spend an idle hour.

DAYLIGHT APPEARANCE

An electric sign should look well and carry its advertising message by day as well as by night. Daylight efficiency in electric signs sometimes adds to the cost, but it is worth the extra investment. Just as a merchant should light his display windows to get their after-dark value, so should he have a night sign which is effective by daylight.

It is difficult to lay down any rules regarding this matter which will apply generally. The best plan is to put the problem up to the sign manufacturer, explaining that daylight appearance is just as essential as the night display, and that designs submitted must stand the double test.



This shows how a trade-mark signature can be worked into an electric sign to good effect. Though small, this is a very effective bit of advertising.



A famous Corticelli kitten which will be erected in 25 cities in America next year. The experience of this manufacturer with one sign in New York has lead him to erect similar signs in every large city in the country.

USE OF COLOR

By all means use color—but not too much. A touch of color gives charm and interest; an overload of color looks crude and undignified except in very rich and spectacular displays.

The following table gives the percentage of light absorbed by the various colors in which sign lamps are supplied. The higher the absorption factor, the greater the heating effect and the shorter the life of the lamp.

SUPERFICIAL COLORS

NATURAL COLORS

DESIGNATION	Per Cent. Loss of Light Compared to Clear Bulb	DESIGNATION	Per Cent. Loss of Light Compared to Clear Bulb
Yellow	7	Opal	11
Opal	13	Amber or Canary	21
Dull Finish Yellow	21	Pink	29
Amber	25	Green	77
Dull Finish Pink	36	Ruby	84
Dull Finish Orange	44	Purple	93
Ruby	81	Blue	97.5
Green	94		
Blue	96		
Purple	96		

The most desirable colors are opal and yellow on account of

their low absorption factors. Ruby is also much used as red light and is distinguishable at great distances. Green, blue and purple are not efficient for many practical purposes and are not to be generally recommended. Lamps of warm, contrasting colors give pleasing effects. In general, a solid mass or continual line of color is more attractive than a mixture of colors as the introduction of different colors breaks the continuity of outline and thus detracts from the effect.



A very effective sign at Milwaukee, Wisc. The clock is a constant value to passers-by and becomes an habitual attraction. The sign makes a direct advertising statement which leads to direct business. The attractive border with flashers supplies a spectacular feature which compels attention. This is an excellent example of real electric advertising.

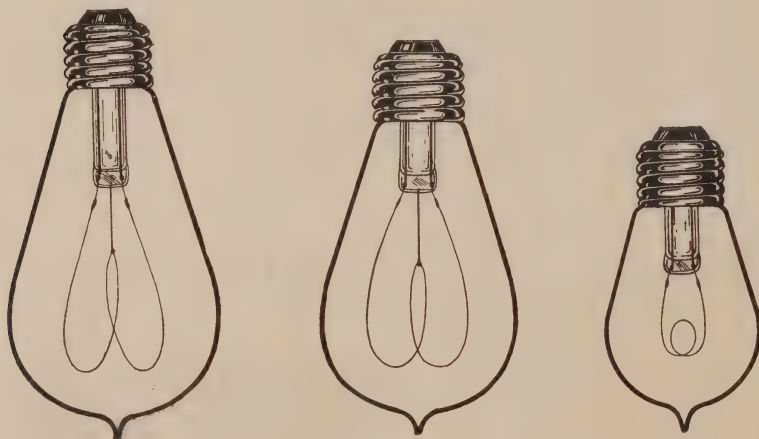
An interesting use of the trade mark in electric advertising. This sign may be criticised because too few lamps are used in the letters. Had the sign been made slightly larger, the effect would have been very much better.



Color caps or color shades are a substitute for natural color glass lamps or dipped color lamps. The advantage over the former is that they are less expensive in the long run and over the latter that they will stand the weather while the color on a dipped lamp will generally wash off with the first rain. They also have the advantage of being readily changed, and a man can have a red effect on his sign one week and blue the next week if he so desires at comparatively little extra cost.

LAMPS AND WIRING

The size and kind of lamps used for signs and electric advertising displays are generally determined by the Central Station for each locality. It is well, however, to know all the lamps available for sign service, so we list below the various sizes and types that are standard.

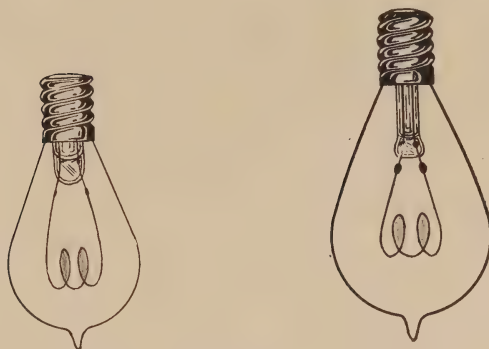


REGULAR CARBON LAMPS

Equipped with Standard Edison Base.

Voltage Range	SIZE OF LAMP		Efficiency in Watts Per Candle	BULB		
	Watts	Candle Power		Style	Diameter	Over-All Length
100-130	10	2.00	5.0	S-14	1 $\frac{3}{4}$	3 $\frac{1}{4}$
"	20	4.82	4.15	S-14	1 $\frac{3}{4}$	3 $\frac{1}{4}$
"	20	4.82	4.15	S-17	2 $\frac{1}{8}$	4 $\frac{3}{8}$
"	30	9.30	3.23	S-17	2 $\frac{1}{8}$	4 $\frac{3}{8}$
"	50	16.8	2.97	S-19	2 $\frac{3}{8}$	5
"	60	20.2	2.97	S-19	2 $\frac{3}{8}$	5

Lamps shown one-half scale.



MINIATURE CARBON LAMPS

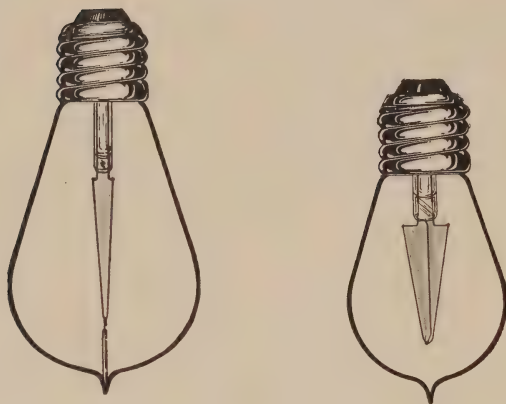
Equipped with Candelabra Base.*

Voltage Range	SIZE OF LAMP		Efficiency in Watts Per Candle	BULB		
	Watts	Candle Power		Style	Diameter	Over-All Length
100-130	13	2	6.5	P-9	1 $\frac{1}{8}$	2 $\frac{1}{2}$
"	14.4	4	3.6	P-9	1 $\frac{1}{8}$	2 $\frac{1}{2}$
"	18	4	4.5	P-11	1 $\frac{3}{8}$	2 $\frac{3}{4}$
"	19	6	3.5	P-11	1 $\frac{3}{8}$	2 $\frac{3}{4}$



One of the many excellent roof signs in Washington, D. C. The druggist over whose store this sign is erected claims that he sells enough ice cream and soda to make this a very profitable form of advertising.

*Candelabra base lamps may be used only upon signs used indoors, according to recent ruling of the Underwriters.



REGULAR MAZDA SIGN LAMPS

Equipped with Standard Edison Base.

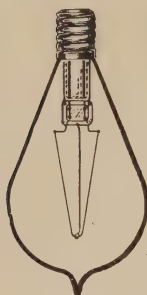
Voltage Range	SIZE OF LAMP		Efficiency in Watts Per Candle	BULB		
	Watts	Candle Power		Style	Diameter	Over-All Length
10-13	2.5	2	1.31	S-14	1 $\frac{3}{4}$	3 $\frac{1}{4}$
"	5	4	1.31	S-14	1 $\frac{3}{4}$	3 $\frac{1}{4}$
"	7.5	6	1.23	S-14	1 $\frac{3}{4}$	3 $\frac{1}{4}$
"	10	8	1.23	S-17	2 $\frac{1}{8}$	4 $\frac{1}{4}$
"	10	8	1.23	S-17	2 $\frac{1}{8}$	4 $\frac{1}{4}$
"	12.5	10	1.23	S-17	2 $\frac{1}{8}$	4 $\frac{1}{4}$
"	15	12.5	1.23	S-17	2 $\frac{1}{8}$	4 $\frac{1}{4}$



A distinctive type of over-hanging sidewalk sign in which individuality is secured through running the letters at a slight angle.



An example of electric advertising applied to a very small business. This is a strong argument for the purchaser who says "I can't afford it."



MINIATURE MAZDA SIGN LAMPS

Equipped with Candelabra Base.*

Voltage Range	SIZE OF LAMP		Efficiency in Watts Per Candle	BULB		
	Watts	Candle Power		Style	Diameter	Over-All Length
10-13	5	4	1.23	P-12½	1 ⁹ / ₁₆	3 ⁵ / ₈

*Candelabra base lamps may be used only upon signs used indoors, according to recent ruling of the Underwriters.



Waterman's have probably spent millions in advertising. This large sign on their New York factory shows that they appreciate the value of electric publicity.



Effective and not extravagant use of permanent outlining in combination with dignified SIGN. This is one of the most attractive night displays in Lincoln, Nebraska.

LAMP RATINGS

All large style lamps are rated in total watts at a certain efficiency (or watts per candle) on either the single or three-voltage basis. The single voltage rating permits burning the lamp at but one efficiency and is used on all lamps for voltages below 100, on many of the 100-125 and on all lamps exceeding 200 volts. The lamps labeled with the three-voltage label are the 100-130 volt, 25, 30, 50 and 60 watt lamps. The voltages shown on the label are in steps of 2 volts apart and will be known as voltages for "High," "Medium" and "Low" operating efficiency, respectively. The candle-power and efficiencies for the lamps given are for high operating efficiency, which the manufacturers ship unless otherwise specified.

CANDLE-POWER

The candle-power values are given in the new International unit, adopted by the United States Government Bureau of Standards, January 1, 1910. This unit is 1.6% higher than the old Parliamentary standard. This means that a Parliamentary 16 c. p. lamp now becomes 16.26 c. p.



An example of spectacular lighting employed by the leading jeweler of Meridian, Miss. This is one of the most beautiful stores in the south and the employment in this case of electric advertising proves that it can be applied to the most



A definite advertisement. A prominent feature of this sign is the decoration and the name "Gibson's." A weekly change of letters advertising a special sale is made, and this merchant claims that results much more than justify the expense.

BULBS

In bulb dimensions the figures used show the maximum diameter of the bulb in eighths of an inch; for example, S-14 means a straight sided bulb $14/8$'s of an inch (or $1\frac{3}{4}$ ") in diameter, P-9 means a pear shaped bulb $9/8$'s of an inch (or $1\frac{1}{8}$ ") in diameter.

FROSTED LAMPS

Frosting of incandescent lamps means the etching of the bulb, either wholly or in part, from the clear transparent state to a translucent state resembling ground glass. This is effected by acid etching of a surface of the bulb. The illumination is reduced about 2.5%, but the total life of the lamp is not affected. The "useful life" of the lamp (that is, life to 80% of rated candle-power) is, however, cut down to about half.

CLEANING FROSTED LAMPS

Frosted lamps can be cleansed by dipping them in very hot water and rubbing dry with tissue paper. When this does not clean them a little soap should be added to the hot water.

COLORLED LAMPS

When desired, lamps can be obtained either superficially colored or made of colored glass. Lamps are superficially colored by coating clear lamps with the desired color. This coating is not weather-proof and will gradually wear off. Lamps made of naturally colored glass give satisfactory service and can be used in exposed places without impairment.



Another view of Broadway. Special attention is called to the Society Clothing ad. This is an inexpensive but very effective advertisement.

LIFE OF LAMPS

The life of carbon and Mazda lamps is the same on alternating or direct current.

The life of any given lamp depends upon the efficiency at which it is burned. It is very important, therefore, that the voltage on the label of the lamp be the same as the circuit voltage at the lamp socket. If lamps are burned in series it is also essential that they be selected for the same current, as the current flowing through any lamp in the series flows through the remainder of the lamps in that series. It is necessary, therefore, if the lamps are to be burned in series, that the lamp manufacturer be notified in order that the lamps may be properly selected.

The frequency and duration of flashing has no effect on the life of either carbon or Mazda sign lamps.



The National Advertisers of State Street, Chicago. Many thousands of people see this sign and have the Dutch girl trade mark impressed upon their minds.

HOW TO ORDER LAMPS

In ordering, to avoid misinterpretation of orders, manufacturers request that customers mention the following facts on each order:

- 1st. Quantity (number of lamps desired).
- 2nd. Class (Carbon or Mazda).
- 3rd. Size of lamps—5, 10, 20 watt, etc. (on miniature lamps give candle-power).
- 4th. Circuit voltage (voltage at lamp socket).
- 5th. For series or multiple burning.
- 6th. Operating efficiency (whether high, medium or low).
- 7th. Style of base (standard Edison or Candelabra).
- 8th. Style of bulb (whether lamps are desired plain, bowl-frosted or all-frosted).
- 9th. If colored lamps are ordered, state color and whether superficially colored or made of natural colored glass.

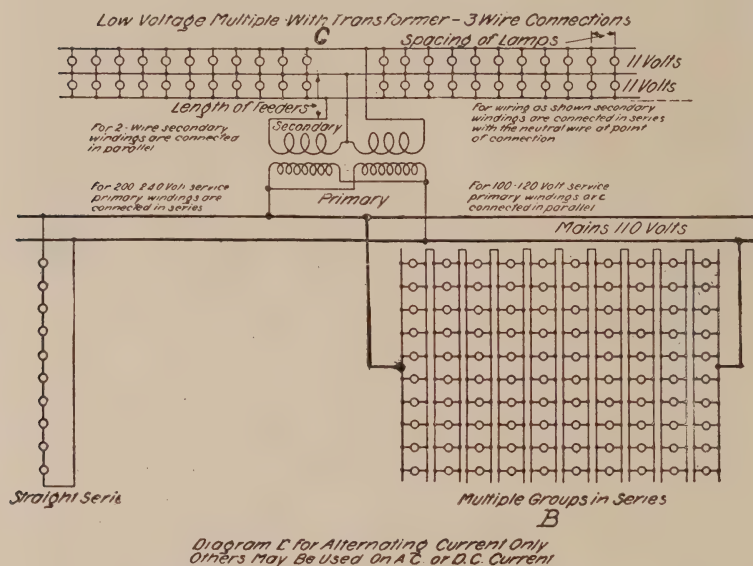
NOTE—When lamps are furnished with single-voltage label, item 5 given above should be omitted.

When ordering lamps, customers should bear in mind that the manufacturer stores the lamps packed in standard packages; an order for less than a standard package necessitates delays in delivery and needless expense in order to supply the broken package quantity.

METHODS OF WIRING

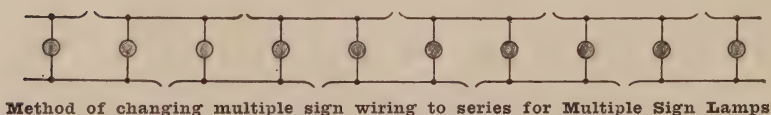
Lamps burning in multiple may be connected either two-wire or three-wire, as shown in the illustration.

In series wiring lamps may be connected either in straight series or multiple series, as shown in diagram.

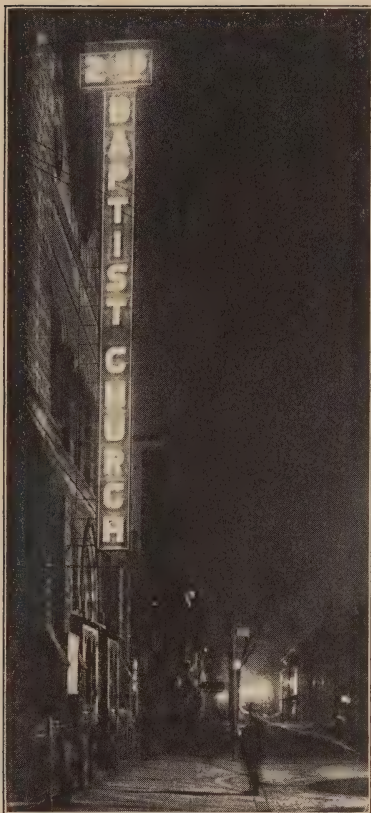


Methods of wiring for Mazda Sign Lamps

Where transformers are used to obtain low voltage, lamps may be connected either two-wire or three-wire as in standard multiple wiring, the transformer reducing the voltage from the regular 110 or 220 volt circuits to the voltage required by the lamp.



The ordinary multiple wiring can be changed to straight series wiring by merely clipping the alternate connections between lamps, as shown in the diagram.



A Philadelphia church that believes in advertising. The old objection that electric advertising is undignified loses force when we see a large number of churches and banks that employ this method of attracting desired attention.

For the business which is located over the beaten track, a sign like this is excellent. The Denver News and Times secures many extra want ads and sells many extra papers as a result of this display.



In a large sign any combination of series or multiple series may be obtained. With straight series wiring, should one lamp in the series burn out, all the lamps in that series will be out. If the lamps are connected in multiple series, the failure of one lamp does not cause any of the other lamps to go out. However, there should be not less than eight to ten lamps in each multiple group or the failure of one lamp will cause too much current to flow through the other lamps of the same group, thus shortening their lives. For example, if only three lamps are burned in multiple series and one fails, then the other two lamps of that group will have a current one and one-half times normal. On the other hand, if there are ten lamps in the group and one fails, then the other nine of the multiple group will have only one and one-ninth times normal current.



A block in Birmingham, Ala., showing five signs overhanging the sidewalk. These signs do much to illuminate the streets as well as advertise the merchants.

DATA ON TRANSFORMERS

To facilitate the use of low voltage Mazda sign lamps to the best advantage, a line of sign lighting transformers and compensators has been developed. These transformers are assembled in weather-proof cases and are therefore adapted to outdoor installations. They are designed for use without oil, which, in conjunction with their low operating temperature, eliminates all fire risks, so that these devices when desired can safely be installed indoors.

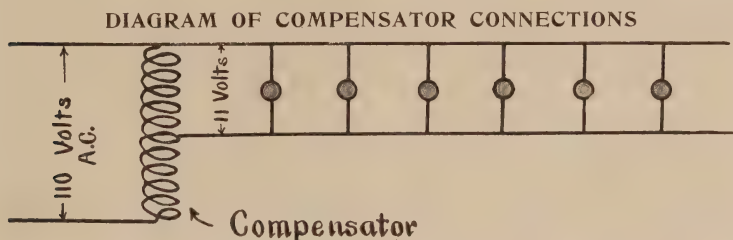
All compensators and transformers are designed with a 10 to 1 ratio, so that Mazda lamps should be $\frac{1}{10}$ the voltage of the line circuit. For example, if the circuit voltage is 110, 11 volt Mazda lamps should be used; if the circuit voltage is 115, 11.5 volt Mazda lamps should be used, etc. Mazda sign lamps are made in steps of 10, 10.5, 11, 11.5, 12, 12.5 and 13 volts.

The transformers have separate primary and secondary windings and in most cases have two primary and secondary windings so that the primary can be connected either two or three-wire for 220 volt three-wire or 110 volt two-wire distribution, and the secondaries generally connected either for two or three-wire 22 volt three-wire or 11 volt two-wire circuits.

Transformers are made in secondary watts capacity of from 250 to 2,000 watts. The higher wattage capacity, however, is not so desirable on account of the heavy current on the secondary. It is usually preferable to use two transformers on a sign located in different parts so that the drop in the secondary wiring may be as little as possible. Special transformers may be secured to accommodate special voltages and frequencies.

The efficiency of these transformers is very high. The advantage of the transformer over the compensator is that the secondary circuit is insulated from the primary, thereby overcoming troubles from grounds on the sign and liability of shock.

Compensators are made in capacities of 250 to 1,000 watts and have two coils connected in series, as shown in the diagram.



These compensators are usually made for 110 volt two-wire primary and 11 volt two-wire secondary.

In order that there may be a minimum drop in the feeders, for the size of the wire used, it is desirable that the length be made a minimum by using various small transformers at various points when the sign is a large one, rather than using one large transformer, which will necessarily add considerable to the distance to a part of the lamps.

Slate bases for transformers are required in some cities under certain conditions and these can usually be obtained from the manufacturer at a normal cost.

Transformers and compensators are designed for a frequency of 60 cycles and will operate satisfactorily on any frequency from 50 to 140 cycles and at voltages from 100 to 130 or 200 to 260. At higher frequencies, however, the capacities of the transformers are slightly reduced.



Two important signs in the heart of Cleveland. The May Co. sign is 126 ft. long and 15 ft. high. Twenty-four hundred lamps are used in this sign and in the tower and ball surmounting the building—the ball revolves supplying necessary spectacular effect to attract attention. The Bailey sign is 82 ft. long and 13 ft. high with waving flags 16 by 8 ft. This sign requires eleven hundred lamps.

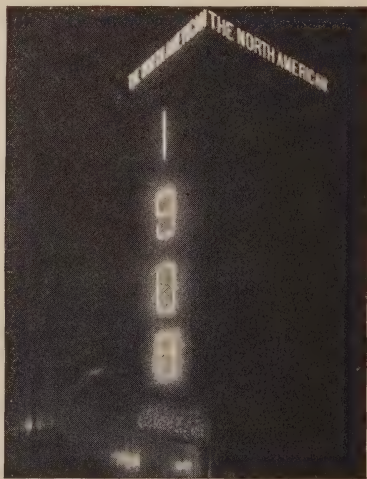
TO FIGURE CONNECTED LOAD

To estimate the number of kilowatts required by any sign, the number of lamps should be multiplied by their wattages, which multiplied by the number of hours the sign burns per day or per month and divided by 1,000, will give the kilowatt-hours consumed by the sign per day or per month. For example, assume a sign contains 200 10-watt lamps and 150 20-watt lamps; the sign consumes a total of 5 kilowatts. The maximum demand of this sign is, therefore, 5 kilowatts. If the sign burns an average of five hours per day for 26 days per month, the total kilowatt-hours consumed will be $5 \times 5 \times 26$ equals 650 kilowatt-hours.

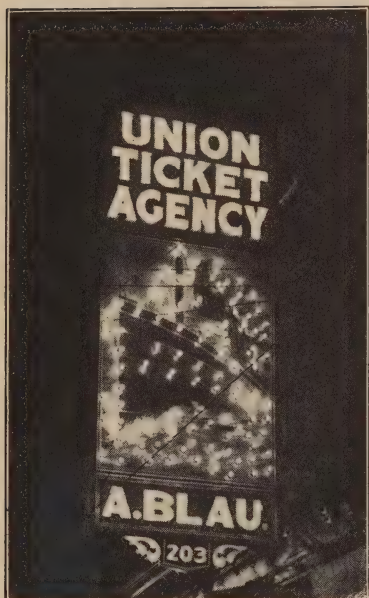
If, however, a flasher is used all the lamps are not burning at the same time, and there will be a smaller number of kilowatt-hours consumed per month which is dependent upon the length of time each lamp is allowed to burn. In some cases the actual kilowatts consumed will be 50% of what would be consumed if a flasher is not used. It should be noted, however, that the speed at which the flasher is run does not affect the kilowatt-hours consumed; in other words, the flasher may operate either rapidly or slowly without changing the consumption. It must also be remembered that maintenance of lamps and flasher are included in the charges of the Central Station in most cases, and ample allowance for same must be made in any estimate of costs.



Barnum & Bailey uses a large number of electric signs for every metropolitan engagement. This sign was erected at 125th Street and is only one of the number used while the circus is in New York.



The idea that electrical advertising and newspaper advertising are competitive is a mistake. This picture shows the building of the Philadelphia North American. It has a special new year sign erected—Jan. 1st, 1909.



An example of a combination painted sign and electric advertising. This sign may be criticised because not enough lamps are used in the letters to give a good effect from a distance. The idea, however, is excellent and may be adapted to many classes of business.

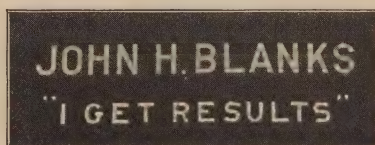
The proper spacing of lamps in an electric sign depends first on the size of the sign, and second on the construction. If a sign is to go over the street, giving the two-fold object of a sign, and at the same time giving a certain amount of illumination for the man on the sidewalk, the lamps should be about four inches apart and a four lamp high letter is standard for sixteen or eighteen inch letter. This only holds true, however, in the case of a flush face letter, as a groove letter comes under an entirely different regulation.

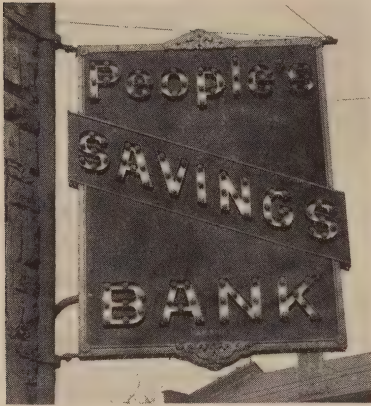
In the roof signs, with the flush faces, the lamps should be about six inches apart but never more, as a wider spacing would give a spotted effect on the sign. Where you have a very large sign, with letters 15 to 20 feet high, it is advisable to put in two rows of sockets, one on each

edge of the letter in order to get a satisfactory effect, though a fairly satisfactory sign can be obtained from one row of sockets by the use of large candle-power lamps.

The grooved letter signs, generally speaking, require fewer lamps to secure a good reading effect, but on this account also they do not throw as much light directly upon the sidewalk. This style of construction is very effective for certain types of signs, being readable at a considerable distance and from an acute angle. The comparative merits of the two types of construction is, however, a technical question and one which local conditions must decide in large measure.

A Meridian, Mississippi, real estate operator uses this sign, bearing his name and a catch phrase which he uses on all of his advertising.

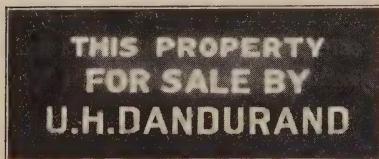




A specially designed groove letter sign which is attractive by day as well as by night. This type of sign requires care, but no more than the brass signs commonly used by banks.

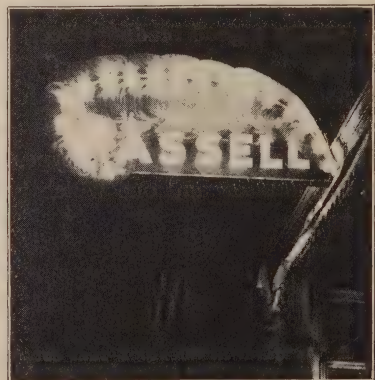
and 7 feet long. This general rule can be followed in all sizes of signs, even for a large roof display. It must be understood, however, that this rule refers to plain block letters only, and where special designs are to be worked into the sign and special flashing effects are desired, the Central Station should take up the question with some sign concern before figuring on any definite size.

In general practice, it is safe to say the flashing effects on small signs have not proven satisfactory and unless the space in which the sign can be used will admit of at least 36 square feet of surface, the flashing effects should not be figured on and the customer should not be interested in it.



Another example of real estate advertising by electricity. The busy man who buys real estate is generally in his office during daylight, but the electric sign reaches him and makes an indelible impression when he is abroad after dark.

A very simple rule to follow in the spacing of letters in an electric sign is that the width of the letters should be two-thirds of the height. That is, a letter 21 inches high should be 14 inches wide. In addition to this, there should be figured a certain amount of space at the top and bottom of the sign. For example, a sixteen inch letter sign will be approximately 2 feet wide and 15 inches should be allowed for the space occupied for each letter. In addition to this, there must be figured a space at either end of the sign. As an example, a sign reading DRUGS with 16 inch letters will be 2 feet wide



A sign that tells its own story. There are many classes of business in which signs of this kind can be employed.



An example of co-operative electric advertising. The tenant on the ground floor uses a great deal of light in the display window and employs an attractive panel type sign. The dental firm on the second floor outlines the buildings with lights on the stairway. The roof is occupied by a cigar sign—this is one of the good examples of local electric advertising in Lincoln, Neb.

DIMENSIONS OF LETTERS

Sign letters and letters of solid electric signs can, of course, be any size, there being no limit but the sky. For signs over the sidewalk, however, if the limit of the size of letters to 24 inches is maintained, it will give a city a very neat and attractive appearance and there will never be trouble with city officials, civic leagues or city councils and commissions over sign ordinances. In setting this 24 inch limit, a one line sign, in other words, one line of electric letters should be strictly adhered to, and if the customer desires a two line sign, a smaller letter should be used.

In roof displays and roof signs, the conditions are reversed and the larger sign you can get, the more satisfied your customer will be.

When planning roof display, care should be taken to figure over the sign desired, and see that there are not too many letters to go into the desired space. The distance the sign is to be read is, of course, a factor in determining the size and no rule can be laid down regarding this as there is no definite distance at which signs can be read. A sign that can be read a mile in one city will not be read a quarter of a mile in another on account of the different atmospheric conditions.

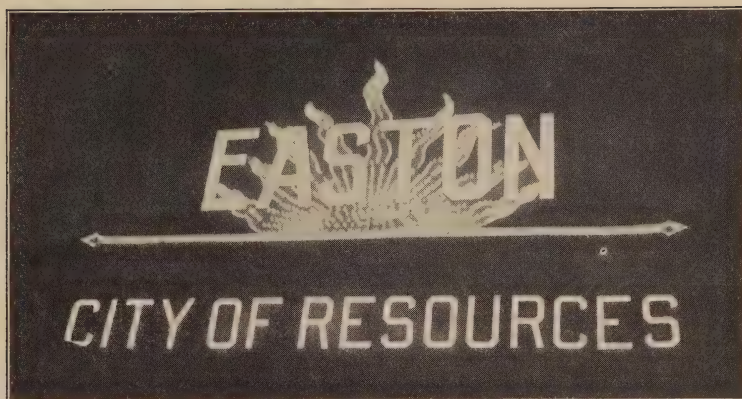


A store in which the interior lighting, window lighting sign and electric advertisement are all used to excellent advantage. A small electric sign is suspended above the first floor, while a large display feature showing a playing fountain is erected on the roof. This is one of Denver's most prominent electric advertisements.

COLOR OF SIGNS

The general standard colors for the background of electric signs are black, blue or dark green, although red is used to a certain extent. These are the only colors that can stand the weather and any lighter colors will fade with the action of the elements.

White is the only satisfactory color for the letter itself, as any other color will absorb rather than reflect the light and destroy the effective appearance of the sign.



A slogan sign erected at Easton, Pa. This sign was erected at a point within view of every passing train. This is done much to advertise the city.

SOCKETS

Any standard weatherproof socket manufactured for sign use is satisfactory providing it has been approved by the Underwriters and has been demonstrated as thoroughly weatherproof. A socket with extending porcelain cap which protects the base of the lamp from water is desirable in that it gives a longer life to the lamp.

A removable copper shell is also recommended inasmuch as there is a certain amount of wear from the taking of the lamps out of the sign for cleaning or renewing, and as the workmen are in the air, they cannot be as careful as they would be under ordinary conditions and the copper shell is many times ripped and torn. If the copper shell cannot be removed from the front of the socket, it is necessary to open up the sign to make repairs, while if the shell can be removed a new one can be put in with comparatively small expense.

HANGING OF SIGNS

The ordinary street sign should be carefully hung by a reputable sign hanger who knows his business. There should be at least one top lift and two side guys. Expansion bolts should be used at least on the top lift, and provision should be made for keeping side guys taut at all times. It is impossible to lay down any rule for the hanging of signs as conditions vary so much and the buildings are of such variable character. If the sign hanger doing the work is careful, he will put up the sign too well rather than not well enough and there will be no danger of falling. The most important part in the hanging of the sign comes not in the original work, but in the inspection and upkeep after the sign has been in use for a year. It is then that rust begins its work and the chances for the sign



Muskogee, Okla. erected this arch opposite the railroad station to welcome visitors to the city. This arch cost \$3,000 to erect and the citizens of Muskogee claim that it was a very profitable investment.



A thoroughly dignified sign which may be applied to any business.

to fall and injure people become the greatest. All of the hanging rig should be repainted at least every twelve months, galvanized material should be used where practicable and a thorough inspection be made to see that by no chance any bolts or irons become weakened. If this is thoroughly done, there will never be any danger from electric signs falling.



A Brooklyn Tabernacle erected this sign at the end of the Brooklyn bridge, believing that it is a power for good.

FLASHERS

As a general principle, we may say that flashers cannot be too good. Probably 75% of flasher trouble has resulted from trying to use cheap or "amateur" flashers. The obvious thing, then, is to secure all flashers from established sign manufacturers or from flasher manufacturers of known responsibility.

The flasher has two advantages: it gives movement which attracts attention and enables one to secure spectacular effects; and it reduces the amount of currency necessary to operate a given sign.



The First Baptist Church of Minneapolis has found that electric advertising keeps the church prominently in the public eye. It is reported that the erection of a church sign invariably leads to greater interest in church work.

The economy feature is largely misunderstood. When a man is figuring upon an Electric Advertisement he should determine; first, what he can afford to pay for current and maintenance; and, second, what he can afford to invest in the sign. These two amounts should be so balanced that he secures the largest advertising value possible. A sign of great elaborateness that takes comparatively little current will represent a large investment and small maintenance, yet such a sign frequently defeats its own purpose. Similarly a less costly sign with large lamps burning constantly, and representing a comparatively small initial outlay and high maintenance may likewise prove unsatisfactory. The Central Station is interested primarily in the sale of current and the sign manufacturer in the sale of signs, and proper service to the consumer requires an honest balance of the two interests. We have no hesitation in saying that this balance will be maintained by all sign salesmen connected with reputable manufacturers or with any Central Station.

A moving sign (sign equipped with flasher) takes less current than one that burns constantly, but the maintenance of the flasher may affect this saving. For general guidance it should be estimated that a moving sign saves 40% in current costs—that is to say, a 1,000 lamp sign with a proper and well-designed flashing feature would take about the same current as a 600 lamp sign burning constantly, but the electric light bill will seldom follow this ratio because in all cases where the flasher fails to work the lighting company must keep the sign burning constantly. Also, into any estimate of current cost we must figure flasher and lamp maintenance.

A sign flasher, like any other piece of moving mechanism, requires inspection, oiling and maintenance. It will not run forever unless cared for. This does not mean that a flasher is a delicate instrument, for, as a matter of fact, all standard flashers are extremely hardy; but the sign salesman and the customer must realize that the flasher needs attention and that this attention, while it will save possible dissatisfaction, costs money.

Another point of importance is that the flasher manufacturer can give valuable advice in the matter of securing extraordinary effects, such as playing fountains, border chasers, spelling out of letters, etc. When something extraordinary is desired, it is well to get the advice of a responsible manufacturer. Furthermore, he can tell you a number of things that are impossible. There is a reasonable limit to flasher effects. Almost any effect can be secured at a price and by the use of specially designed machines, but it is obviously unwise to plan elaborate flashing effects for a comparatively small sign. The use of standard apparatus properly adapted to the problem in hand is always the cheapest and most effective.

In adopting a flasher, be sure that it complies with the Underwriters' rules. Violations of the rules may slip past careless inspectors, but "the game is not worth the candle." Here, as in the construction of the sign itself, there is temptation to cut costs, and the customer should be advised as to the exact merits of standard goods and the faults of those which may be secured at a cut price.



The famous manufacturer of food products who erected this sign on a branch warehouse shows that electric advertising appeals most strongly to those who have had experience in other branches of advertising.

INSTALLATION OF FLASHERS

Flashers should be installed as directed by the manufacturer. He knows his business or he wouldn't be in it. In this connection we believe that the following list of "Don'ts" by a prominent manufacturer are well worth remembering. The advice applies to any good flasher:

DON'T start your flasher up without examining it for damage in transit. Give it a few burns by hand and see that everything works perfectly free and easy. If you fail to detect damage, it is liable to give trouble within a few days and get your customer skeptical. It is far better to avoid a complaint than to remedy one after it is made.

DON'T install them hind-side foremost. The switches should always be within reach.

DON'T run a tight belt. Practically no power is required. Run it just as loose as it will stay on. If you run a tight belt you will simply cut out your pulley shaft and very likely burn out your motor. If you have any doubts as to how easy flashers run, take a raveling out of a piece of cloth and see how you can use it for a belt to drive the flasher for a few minutes.



The trade mark is used by large national advertisers in their electric advertising. This is an example of the electric advertising on the board walk at Atlantic City.

DON'T run your flasher backwards.

DON'T run your flasher too fast or too slow. If you run a flasher too slow the contacts will be broken slowly and burn out abnormally fast by holding an

arc. If you run it too fast you will shake parts loose with vibration.

DON'T fail to instruct your customer about oiling it. If you fail so to instruct your customer, the first thing you know the worm will be cut out. Instruct someone in authority other than the office boy.

DON'T screw either the flasher or motor down tight to the base. If you screw a flasher down tight, its base usually acts as a sounding board, especially if placed over storm doors or on a light partition. Always leave one-eighth of an inch clearance under the head of a screw that holds the flasher and motor, and put some rubber under both if necessary, otherwise it will be noisy.

DON'T expect a flasher to run in a secluded spot forever without attention. If you permit a customer to neglect a flasher indefinitely, it is going to give trouble; he is going to condemn it and he will do us both more harm than a dozen satisfied ones can do us good.

DON'T overload any switch on a flasher. If you overload any switch on a flasher, you are not only courting trouble, but you are going to get it right from the start.



A street in Dayton, O., showing the variety and effectiveness of electric sign advertising. Dayton merchants agree that since the introduction of electric signs, the business of the city has increased many fold.

NATIONAL ELECTRICAL ADVERTISERS

The following list contains the names of prominent national advertisers using Electrical Advertising, together with the location of their signs, kind of goods advertised and the names of the advertising manager or agent in charge. The list, while obviously incomplete, will serve to indicate the wide use of electrical displays by firms experienced in all branches of advertising.

Many of the signs are erected on the factories of the advertisers and upon their branches. This is the first step, but practically all those who begin with factory signs sooner or later seem to branch out and become, in the full sense of the term, National Electrical Advertisers.

Name of Advertiser	Goods Advertised	Location	Adv. Mgr. and Agt.
Adler	Collegian Clothes	Denver Branch	
Alabama-Georgia Syrup Co.	Table Syrup	Montgomery, Ala.	
Alaga Syrup Co.	Cane Syrup	Montgomery, Ala.	
Alpha Portland Cement Co.	Portland Cement	Easton, Pa.	
Altamont Spring Water Co.	Altamont Water	Washington	
American Safety Razor Co. New York, N. Y.	Ever-Ready Safety Razor	New York	W. Rankin, Adv. Mgr., Federal Adv. Co., 239 W. 39th
American Thermos Bottle Co.	Thermos Bottle		W. B. Walker, Adv. Mgr., Leven-Nichols Co., 527 5th Ave.
American Tobacco Co.	Owl Cigar	Kansas City, Mo.	
American Tobacco Co.	Helmar Cigarettes	Atlantic City, N. J.	
American Motor Co.	Various Automobiles	New York City	
Anheuser-Busch Brewing Co.	Budweiser Beer	Denver, New York, St. Joseph, Chicago, Phila., Columbus, O., Washington	
Atlas Insurance Co., Montgomery, Ala.	Life Insurance	Montgomery, Ala.	
Babcock	Electric Vehicles	Cleveland	
Blackwell's Durham Tobacco Co., Durham, Ga.	Smoking Tobacco bulletin boards	Throughout Country	
Butterick Publishing Co., New York, N. Y.	Butterick Trio	New York	Robt. Frothingham, Adv. Mgr., H. N. Kirby, Asst.
B. & O. R. R. Co.,	Stations	New York, Baltimore & Chicago New York	W. E. Lowes, Adv. Mgr., Baltimore
F. L. Cailles Cailles-Vevey, Switzerland	Chocolate	New York	
Chalmers Motor Co., Detroit, Mich.	Chalmers Cars	All Branches	
Clarke Distilling Co.	Clarke's Pure Rye	Various Cities	W. H. Caldwell, Adv. Mgr.
Caldwell Lawn Mower Co.	Lawn Mowers	Newburg, N. Y.	Homer W. Hedge Co., Agts., New York City
Colgate & Co., Jersey City	Soap	New York Jersey City	Sidney M. Colgate, Mgr. Frank Seaman, Adv. Agt., N. Y.
F. W. Cook Brewing Co.	Goldbloom Beer	Evansville, Ind.	F. W. Cook, Sr., direct.
C. B. Corset Co.	Corsets	New York & St. Louis	
C. & M. W. Ry. Cudahy Packing Co., Chicago, Ill.	Old Dutch Cleanser	Chicago, Ill. New York Chicago	
Diamond Rubber Co.	Tires	Akron, Ohio	Jas. A. Braden, Adv. Mgr. Fowler-Simpson Co., Agts.
Duntley Mfg. Co. Edelweiss Brewing Co.	Vacuum Cleaners Beer	All Branches Chicago	
Eisenlohr, Bros.	Cigars	Atlantic City and Philadelphia	
Elgin Watch Co.	Watches	Detroit	
Faunce & Spinney	Patrician Shoes	Washington	
Firestone Tire & Rubber Co.	Tires	Akron, Ohio	J. F. Singleton, Adv. Mgr. Frank Presbrey Co., N. Y., Agts.
Florsheim Shoe Co., Chicago, Ill.	Shoes	All cities	

Name of Advertiser	Goods Advertised	Location	Adv. Mgr. and Agt.
Ford Motor Co.	Ford Autos	Detroit	H. D. Harper, Adv. Mgr. MacManus-Kelley Co., Agts., Toledo
Frisco Ry.		St. Louis and New Orleans	
Gillette Safety Razor Co., Boston	Razors	Washington, Cincinnati	
Gold Seal Champagne Wines		Buffalo	
B. F. Goodrich Co., New York, N. Y.	Tires	Akron, Ohio	E. C. Tibbitts, Adv. Mgr. Gardner Adv. Co., St. Louis, Agts. James Kipp, Adv. Mgr., direct
Goodrich Rubber Co.	Rubber Goods	New York	
A. Guckenheimer & Bro.	Guckenheimer Rye	Philadelphia	
Haig & Haig	Scots Whiskey	New York	
H. J. Heinz Co.	Pickling Products	Pittsburg, Pa.	Colver Gordon, Adv. Mgr. N. W. Ayer & Son, Phila. Agts.
Henderson	"Smoothest" Whiskey	Chicago, Ill.	
Hupp Motor Car Co.	Autos	Detroit	C. A. Spalding, Adv. Mgr. Kelley Co., Agts, Toledo
Huyler's, 18th St. & Irving Pl., New York City	Candy	All branches	J. Schullinger, Adv. Mgr. Louis Lewis, 220 Broadway, Adv. Agt. J. Walter Thompson Co., 44 E. 23d St., Adv. Agts.
Hyatt Roller Bearing Co.	Roller Bearings	Newark, N. J.	
Johns-Pratt Co.	Asbestos Products	Hartford, Conn.	
Johnson & Johnson, New Brunswick, N. J.	Surgical Supplies	New Brunswick, N. J.	F. B. Kilmer, Adv. Mgr. J. Walter Thompson Co., Agt.
Julius Kayser & Co.	Silk Gloves	New York	Chas. M. Loddell, Adv. Mgr. Lord & Thomas, Agts.
W. K. Kellogg Co., Battle Creek, Mich.	Corn Flake	Battle Creek, Mich.	W. K. Kellogg, Adv. Mgr. Clague-Painter-Jones Co., Agt.
J. Elwood Lee Co., Conshohocken, Pa.	Auto Tires	Conshohocken, Pa.	
Lion Collar Co.	Lion Collars	Cleveland, Ohio	
Louisville-Indianapolis Traction Co.		Louisville, Ky.	
Mail Pouch Tobacco Co.	Tobacco	Wheeling, W. Va.	
Moerlein Brewing Co., Cincinnati, O.	Moerlein Beer	Boston, Atlantic City, Philadelphia	J. C. Jung, Adv. Mgr. Elaine-Thompson Co., Adv. Agts.
Monticello Distilling Co.	Monticello Whiskey	Washington	
National Biscuit Co., 15th St., & 9th Ave., New York, N. Y.	Uneeda Biscuit	New York	H. C. Mace, Adv. Mgr. N. W. Ayers & Son, Agts., Philadelphia
North German Lloyd S. S. Co.	Special Trips	Hoboken	E. Justus, Adv. Mgr. Al. Frank Co., 25 Broad St., New York, Adv. Agts. B. M. Moses, Adv. Mgr.
Omega Chem. Co., New York, N. Y.	Omega Oil	New York	Fred H. Squier, Adv. Mgr.
Pabst Brewing Co., Milwaukee, Wis.	Blue Ribbon Beer	Milwaukee	Cramer-Krasselt Co., Agt., Milwaukee

Name of Advertiser	Goods Advertised	Location	Adv. Mgr. and Agt.
Pierce Motor Car Co.	Pierce-Arrow Cars	Cleveland, branch	
Pillsbury-Washburn Flour Mills Co., Minneapolis, Minn.	Cereals	Minneapolis, Minn.	C. F. Dick, Adv. Mgr., Flour Mahin Adv. Co., Chicago, Agts.
Pioneer Suspender Co., Philadelphia, Pa.	Brighton Garters	Atlantic City, N. J.	
Postal Telegraph-Cable Co.	Telegraph	Various branches	C. P. Brunch, Adv. Mgr., New York
Prudential Ins. Co., Newark, N. J.	Insurance	Hoboken, N. J.	Geo. F. Baright, Adv. Mgr., Newark, N. J. J. Walter Thompson Co., Agts.
Rauch & Lang, Cleveland, Ohio	Electric Vehicles	Cleveland and St. Louis	H. N. Rovencroft, Mgr. Lord & Thomas, Chicago, Agts.
Regal Shoe Co.	Shoes	All branches	
Reily-Taylor Co.	Louisiana Coffee	New Orleans, La.	
Runkel Bros.	Cocoa	New York	M. Fieux direct E. A. Beilfeld, Adv. Mgr.
Schlitz Brewing Co., Milwaukee, Wis.	Schlitz Beer	Philadelphia and Milwaukee	Stack-Parker Adv. Agency, Chicago
Simmons Hardware Co., St. Louis	Razors and Cutlery	Washington, Atlantic City, San Antonio, Tex.	
Southern Railway Co.	Speedometers	Atlanta, Ga. New York and Chicago	
Stickney Cigar Co.	Automobiles	Kansas City	
Studebaker Automobile Co.		South Bend, Ind.	E. Leroy Pelletier, Adv. Mgr. Frank Seaman, Inc., Agts. C. R. Sherlock, Adv. Mgr.
United Cigar Stores Co.	Cigars	Various Branches	C. E. Sherin & Co., Agts., 455 5th Ave. New York
United Tire Co.	Tires	Chicago	
U. S. Motor Co., Volk St., Tarrytown, N. Y.	Maxwell Car	Philadelphia	
James Vernor	Ginger Ale	Detroit, Mich.	
Victor Talking Machine Co., Camden, N. J.	Phonographs	Cleveland, Ohio	
Walker Whiskey	Whiskey	Walkersville	
Walkover Shoe Co.	Shoes	All branches	
Warner Manufacturing Co., Fort Lee, N. J.	Warner's Sugar	Fort Lee, N. J.	
Truly Warner, New York, N. Y.	Hats	Philadelphia	
White-Hentz Co.	Trimble Whiskey	New York	
Wm. Wrigley, Jr. & Co., Chicago, Ill.	Spearmint Gum	Chicago, N. Y. C. Atlantic City	Wm. Wrigley, Jr., Adv. Mgr. Stack-Parker, Adv. Agency
	Clysmic Water	Atlantic City	
	Lipton's Teas		
	Hassan Cigarettes	Montreal, Quebec	
	Olier Plows	South Bend, Ind.	
	Cremo Cigar	Cincinnati-Atlantic City	
	Red Tip Horse Shoes		
	Tip-Top Bread	Chicago	
	Sincerity Clothes	Milwaukee branch	
L. C. Smith Bros.	Typewriters	Pittsburgh, Pa. Syracuse, N. Y.	

"There is a Difference"

Bryan-Marsh Company

Manufacturers

All Types High Grade
Incandescent Lamps

Chicago, Ill.
Central Falls, R. I.

Greenwood Advertising Company

ELECTRIC SIGN
MANUFACTURERS

Knoxville, Tenn.

GENERAL ELECTRIC COMPANY

Incandescent Lamps of
all Types for all
Circuits

Schnectady, N. Y.

Franklin Electric Manufacturing Company

Manufacturers of
INCANDESCENT
LAMPS
of
ALL TYPES

Hartford - - Conn.

THE SIGNS

Made by

The Valentine
Electric Sign
Company

of Atlantic City, N. J.

Compel attention
and bring results!

The A. & W.
Electric Sign
Company

Largest Electric
Sign Works *in the*
World

*Prospect Avenue and
West Third Street
Cleveland : Ohio*

WESTINGHOUSE
ELECTRIC &
MFG. COMPANY

Manufacturers
of

Incandescent
Lamps
of all Types

BLOOMFIELD, N. J.

The American
Transformer
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